

**REMARKS**

Applicant submits this response in reply to a final Office Action mailed on June 21, 2005.

Applicant makes this Amendment without prejudice or disclaimer. Claims 1-32 were pending in the Application prior to the amendments above. Applicant has added claim 33. In making this Amendment, Applicant has added no new matter. Support for the amendments above can be found in the specification and claims as filed. Reconsideration of the pending claims is respectfully requested in view of the foregoing amendments and the following remarks.

The Office Action rejects claims 1, 2, 4, 5, 16-18, 20, 27, 29, and 32 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,104,391 to Ingle et al. (hereinafter "Ingle") in view of U.S. Patent No. 6,080,982 to Cohen (hereinafter "Cohen"). The Office Action rejects claims 3, 12-15, 19, and 28 under 35 U.S.C. § 103(a) as being unpatentable over Ingle in view of Cohen and further in view of U.S. Patent No. 4,538,536 to Sick (hereinafter "Sick"). The Office Action rejects claims 6-11, 21-26, 30, and 31 under 35 U.S.C. § 103(a) as being unpatentable over Ingle in view of Cohen and Sick and further in view of U.S. Patent No. 5,006,701 to Kothe et al. (hereinafter "Kothe").

**A. Claims 1, 2, 4, 5, 16-18, 20, 27, 29, and 32**

Claims 1, 2, 4, 5, 16-18, 20, 27, 29, and 32 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Ingle in view of Cohen. Claims 2, 4, 5, and 16

depend from claim 1. Claims 18 and 20 depend from independent claim 17. Claims 29 and 32 depend from independent claim 27.

One of the criteria for a *prima facie* case of obviousness is that “the prior art reference (or references when combined) must teach or suggest all the claim limitations.” *See* MPEP § 2143. The rejection under 35 U.S.C. § 103(a) is improper because neither Ingle nor Cohen teaches or suggests, singularly or in combination, all the claim elements of each of independent claims 1, 17, and 27.

Independent claims 1, 17, and 27 each claim a system, method, and an apparatus, respectively, which includes, among other elements, “a second fiber optic cable comprising proximate and distal ends, the proximate end of the second fiber optic cable in communication with the receiving lens and the distal end of the second fiber optic cable in communication with the sensor.”

The Office acknowledges that Ingle “does not disclose a second fiber optic cable comprising proximate and distal ends, the proximate end of the second fiber optic cable in communication with a receiver and the distal end of the second fiber optic cable in communication with the sensor.” *See* Office Action at 2. Contrary to the assertions of the Office Action, Cohen does not disclose “a second fiber optic cable comprising proximate and distal ends, the proximate end of the second fiber optic cable in communication with the receiving lens and the distal end of the second fiber optic cable in communication with the sensor,” as claimed.

Rather, Cohen describes “the embedment of sacrificial fiber optic material at a bearing surface which is subject to wear due to sliding contact with another

(non-bearing) object ... The fiber optic line accesses and exits the bearing member, typically approximately parallel to the measured surface ... The light emitter is connected at a first end of the fiber optic line. *The light receptor is connected at a second end of the fiber optic line* ... The light emitter emits a first amount of light. The light receptor receives a second amount of light *which follows the transmission of the first amount of light through the fiber optic line segment* which is embedded at the bearing surface. The diminution of the second amount of light versus the first amount of light is a function of the deterioration of the fiber optic line segment which is embedded at the bearing surface.” Cohen at col. 2, ll. 1-27 (emphasis added).

Cohen describes an emitter that is connected to a first end of a fiber optic line and a receiver that is connected to a second end of the *same* fiber optic line. Light emitted by the emitter travels through a fiber optic line embedded in a bearing surface and is detected by the receiver at the other end of the *same* fiber optic line. “[A]s the optical fiber wears, the passage of light diminishes, thereby indicating the amount of wear [of the bearing surface].” Cohen at col. 9, ll. 65-67. Thus, Cohen does not disclose, “a second fiber optic cable comprising proximate and distal ends, the proximate end of the second fiber optic cable in communication with the receiving lens and the distal end of the second fiber optic cable in communication with the sensor,” as claimed.

As neither Ingle nor Cohen teaches or suggests singularly or in combination, all the claim elements of each of independent claims 1, 17, and 27, Applicant respectfully submits that independent claims 1, 17, and 27 are each patentable over

Ingle in view of Cohen. Claims 2, 4, 5, and 16 depend from claim 1. Claims 18 and 20 depend from independent claim 17 and claims 29 and 32 depend from independent claim 27, and are, therefore, also allowable for at least the same reasons as independent claims 1, 17, and 27. Accordingly the rejections to claims 1, 2, 4, 5, 16-18, 20, 27, 29, and 32 should be withdrawn and the claims allowed.

Moreover, the Office's proposed modification of Ingle with Cohen would render Ingle unsatisfactory for its intended purpose. Thus, there is no suggestion or motivation to make the proposed modification. *See* MPEP § 2143.01 (citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)).

Ingle is directed to “means of detecting breakage of *optical fibers* of the type that are used for *in vivo medical procedures*.” Ingle at col. 1, ll. 6-9 (emphasis added). Ingle states that “it is important that *any break* in the light path be detected and the laser light source be *immediately interrupted* to prevent the escape of light in an uncontrolled manner.” *Id.* at col. 1, ll. 26-29. “The energy transmitted through the fiber is of sufficient level that if a break in the fiber were to occur and not be detected, *significant damage* to the vessel *and surrounding tissue would occur due to the escape of laser light energy from the break in the fiber*. In some circumstances the uncontrolled lasing can endanger nearby personnel.” *Id.* at col. 1, ll. 38-44 (emphasis added).

Cohen is directed to determining progressive loss of material of a bearing wear surface. Cohen at col. 1, ll. 10-25. Cohen describes “the embedment of *sacrificial fiber optic material* at a bearing surface *which is subject to wear* due to sliding

contact with another (non-bearing) object ... The light emitter emits a first amount of light. The light receptor receives a second amount of light which follows the transmission of the first amount of light through the fiber optic line segment which is embedded at the bearing surface. *The diminution of the second amount of light versus the first amount of light is a function of the deterioration of the fiber optic line segment which is embedded at the bearing surface.*” *Id.* at col. 2, ll. 1-27 (emphasis added). “[A]s *the optical fiber wears*, the passage of light diminishes, thereby indicating the amount of wear [of the bearing surface].” *Id.* at col. 9, ll. 65-67.

Thus, Cohen clearly provides for the purposeful wearing or breaking of the optical fiber. Ingle, however, clearly states that such wearing or breaking of the optical fiber would result in significant damage to the surrounding tissue of a patient during an in vivo medical procedure. Ingle contemplates immediately interrupting the light source upon detection of breakage of the optical fiber. Therefore, the modification of Ingle by Cohen would render Ingle unsatisfactory for its intended purpose, and thus, there is no suggestion or motivation to make the proposed modification. Accordingly the rejections to claims 1, 2, 4, 5, 16-18, 20, 27, 29, and 32 should be withdrawn and the claims allowed.

**B. Claims 3, 12-15, 19, and 28**

Claims 3, 12-15, 19, and 28 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Ingle and Cohen in view of Sick. Claims 3 and 12-15 depend ultimately from claim 1. Claim 19 depends from independent claim 17, and claim 28

depends from independent claim 27. Dependent claims include all of the elements of the claim from which they depend.

The rejection under 35 U.S.C. § 103(a) is improper because neither Ingle, Cohen, nor Sick teaches or suggests, singularly or in combination, all the claim elements of each of independent claims 1, 17, and 27. One of the criteria for a *prima facie* case of obviousness is that “the prior art reference (or references when combined) must teach or suggest all the claim limitations.” *See* MPEP § 2143. The cited references do not teach or suggest all the claim elements of each of independent claims 1, 17, and 27.

As discussed above in Section A, neither Ingle nor Cohen teaches or suggests, singularly or in combination, all the claim elements of each of independent claims 1, 17, and 27. As discussed above, neither Ingle nor Cohen teaches or suggests, singularly or in combination, a system, method, or apparatus, which includes, among other elements, “a second fiber optic cable comprising proximate and distal ends, the proximate end of the second fiber optic cable in communication with the receiving lens and the distal end of the second fiber optic cable in communication with the sensor,” as claimed. Moreover, as described above in Section A, the Office’s proposed modification of Ingle with Cohen would render Ingle unsatisfactory for its intended purpose. Thus, there is no suggestion or motivation to make the proposed modification of Ingle with Cohen.

Sick does not cure the deficiencies of Ingle and Cohen. Sick does not describe a system, method, or apparatus, which includes, among other elements, “a second

fiber optic cable comprising proximate and distal ends, the proximate end of the second fiber optic cable in communication with the receiving lens and the distal end of the second fiber optic cable in communication with the sensor,” as claimed.

Rather, Sick describes a complex arrangement of deflecting mirrors, reflecting strips, lenses, and mirrors to detect a laser beam. Sick does not describe, or even contemplate, the use of fiber optic cables for detecting thread breakage. Thus, Sick does not disclose “a second fiber optic cable comprising proximate and distal ends, the proximate end of the second fiber optic cable in communication with the receiving lens and the distal end of the second fiber optic cable in communication with the sensor.”

As neither Ingle, Cohen, nor Sick teaches or suggests, singularly or in combination, all the claim elements of each of independent claims 1, 17, and 27, Applicant respectfully submits that independent claims 1, 17, and 27 are each patentable over Ingle and Cohen in view of Sick. Claims 3 and 12-15 depend ultimately from claim 1, claim 19 depends from independent claim 17, and claim 28 depends from independent claim 27 and are, therefore, also allowable for at least the same reasons as independent claims 1, 17, and 27. Accordingly, the rejections to claims 3, 12-15, 19 and 28 should be withdrawn and the claims allowed.

**C. Claims 6-11, 21-26, 30, and 31**

Claims 6-11, 21-26, 30, and 31 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Ingle, Cohen, and Sick and further in view of Kothe. Claims

6-11 depend ultimately from independent claim 1. Claims 21-26 depend ultimately from independent claim 17. Claims 30 and 31 depend ultimately from independent claim 27. Dependent claims include all of the elements of the claim from which they depend.

The rejection under 35 U.S.C. § 103(a) is improper because neither Ingle, Cohen, Sick, nor Kothe teaches or suggests, singularly or in combination, all the claim elements of each of independent claims 1, 17, and 27. One of the criteria for a *prima facie* case of obviousness is that “the prior art reference (or references when combined) must teach or suggest all the claim limitations.” *See* MPEP § 2143. The cited references do not teach or suggest all the claim elements of each of independent claims 1, 17, and 27.

As discussed above in Section B, neither Ingle, Cohen, nor Sick teaches or suggests, singularly or in combination, all the claim elements of each of independent claims 1, 17, and 27. As discussed above, neither Ingle, Cohen, nor Sick teaches or suggests, singularly or in combination, a system, method, or apparatus, which includes, among other elements, “a second fiber optic cable comprising proximate and distal ends, the proximate end of the second fiber optic cable in communication with the receiving lens and the distal end of the second fiber optic cable in communication with the sensor,” as claimed. Moreover, as described above in Section A, the Office’s proposed modification of Ingle with Cohen would render Ingle unsatisfactory for its intended purpose. Thus, there is no suggestion or motivation to make the proposed modification of Ingle with Cohen.



Kothe does not cure the deficiencies of Ingle, Cohen, and Sick. Kothe does not describe a system, method, or apparatus, which includes, among other elements, “a second fiber optic cable comprising proximate and distal ends, the proximate end of the second fiber optic cable in communication with the receiving lens and the distal end of the second fiber optic cable in communication with the sensor,” as claimed.

The Office Action cites Kothe for describing “a sensor system for regulating machines comprising controllers 22, 23 in communication with a light source 16.” *See* Office Action at 5. Thus, Kothe does not disclose “a second fiber optic cable comprising proximate and distal ends, the proximate end of the second fiber optic cable in communication with the receiving lens and the distal end of the second fiber optic cable in communication with the sensor.” Therefore, neither Ingle, Cohen, Sick, nor Kothe teaches or suggests, singularly or in combination, all the claim elements of each of independent claims 1, 17, and 27.


As neither Ingle, Cohen, Sick, nor Kothe teaches or suggests, singularly or in combination, all the claim elements of each of independent claims 1, 17, and 27, Applicant respectfully submits that independent claims 1, 17, and 27 are each patentable over Ingle, Cohen, and Sick, and further in view of Kothe. Claims 6-11 depend ultimately from independent claim 1, claims 21-26 depend ultimately from independent claim 17, and claims 30 and 31 depend ultimately from independent claim 27 and are, therefore, also allowable for at least the same reasons as independent claims 1, 17, and 27. Accordingly, the rejections to claims 6-11, 21-26, 30, and 31 should be withdrawn and the claims allowed.

**CONCLUSION**

Applicant respectfully submits that the pending claims are allowable.

Applicant respectfully solicits the issuance of a timely Notice of Allowance for all pending claims. The Examiner is invited to contact the undersigned by telephone to discuss any matter related to the Application.

Respectfully submitted,

  
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